MIRAGE

MIRAGE /KLM

Your Quality & Performance Professionals

P. O. Box 1000, Morgan Hill, California 95037
(408) 779-7363 1-800-538-2140 (Outside of CA)

NEW FOR '88!

B3038 — 2 METER AMPLIFIER
30W IN - 380W OUT!

FEATURES

- Low noise (0.5dB) Ga As FET pre-amp provides 20 dB of *clean* gain
- Copper/aluminum heat sink* for maximum heat dissipation
- Only 4 power devices
- **Compact** power (only 13⅜"×5⅜")
- Automatic internal or external relay keying

SPECIFICATIONS

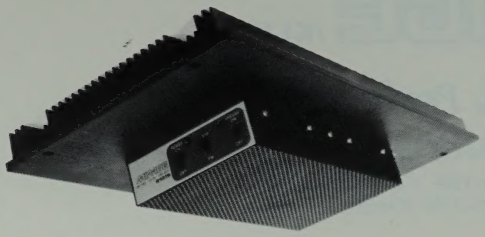
- Frequency range 144 MHz to 148 MHz
- RF power in . . . 200 mW to 30 Watts
- RF power out . . . 380 Watts nom. (30 in — 380 out)
- Modes . . . SSB, FM and CW
- Receive pre-amp . . . 20 dB gain with 0.5 db noise figure
- DC power . . . 13.6 watts 40 amps
- Size 13⅜"×5⅜"
- Weight . . . 8.5 lbs.

* Copper-Embedded Aluminum Heat Sinks

Copper is 2.5 times more conductive than aluminum and ensures rapid and even heat dissipation throughout the heat sink. By bringing heat away from the transistors, greater life can be expected. The extra margin of safety means you don't have to worry about shut-down during long-winded FM conversations or RTTY/Packet operation.

Mirage/KLM now features copper/aluminum heat sinks as standard on repeater amplifiers and as an option on other power amplifiers. *Beat the heat* with our newest addition. Ask for improved heat sink amplifiers!

— Mirage Repeater Amplifiers —



These amplifiers were designed to meet the demand for rugged, reliable, cool running output stages for repeaters and other high-duty cycle applications. Models are available for the 144, 220, and 440 MHz Amateur Bands.

FEATURES — 144 and 220 MHz Models

Cool Running — A 10" high by 19" wide full-finned rack-mounted heatsink keeps the transistor temperatures low for long life. The chassis cover is perforated so air convection will keep the circuit board area cool.

Dual Protection — The amplifiers have two temperature sensors; one on the heatsink and one on the circuit board. If conditions cause either area to overheat, the amplifier will shut off until it cools down to a safe temperature.

Remote Control — The normal RF sensing is easily defeated to allow external control of the power amplifier via a landline of RF link and interface unit.

All-Mode Operation — Class AB linear amplification allows use with SSB, CW or FM modes.

FEATURES — 440 MHz Model D1010R

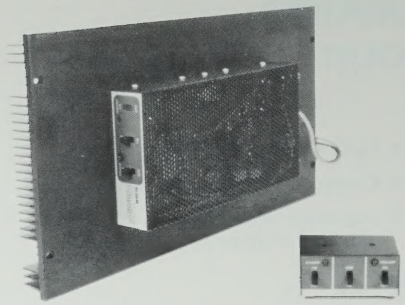
Cool Running — A 10" high by 19" wide full-finned rack-mounted heatsink keeps the transistor temperatures low for long life. The chassis cover is perforated so air convection will keep the circuit board area cool. The RF board is low loss Telflon for minimum dielectric heating.

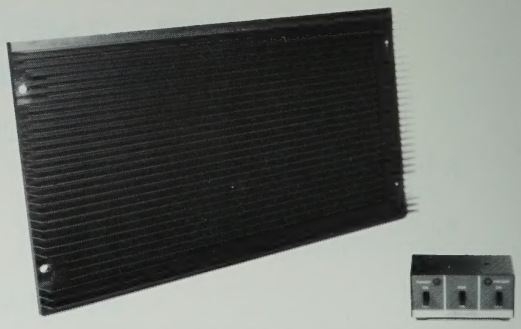
Reliable — The RF changeover relay has been eliminated on this model to provide the highest order of reliability. Teflon connectors are standard on this well-designed unit.

Protection — The amplifier will shut off if conditions cause the heatsink temperature to rise to an unsafe level.

All-Mode Operation — Class AB linear operation is rated for FM, SSB, CW and ATV operation. *(440-450 MHz Standard Range, 420-430 MHz or 430-440 MHz are special order).*

Warranty — RF power devices are guaranteed for one year against failure due to defective materials or workmanship. All other components are guaranteed for two years.





Mirage Repeater Amplifier Models

MHz Freq. Range	Model Number	Watts Power Input	Watts for Max. Cont. Output	Amps Nominal Current	Power Supply (VDC)	RF Connector
145-148	B215R	¾ - 1	110	16 - 18	13.8	Teflon SO-239
145-148	B1016R	3 - 4	120	16 - 18	13.8	Teflon SO-239
145-148	B3016R	10 - 12	120	14 - 15	13.8	Teflon SO-239
223-225	C211R	.3 - .6	80	15 - 16	13.8	Teflon SO-239
223-225	C1012R	4 - 5	90	15 - 16	13.8	Teflon SO-239
223-225	C3012R	13 - 15	90	13 - 14	13.8	Teflon SO-239
440-450	D1010RN	2 - 4	80	14 - 15	13.8	Teflon "N" UG58 A/U

— Specifications —

Our amplifiers run *all* modes (SSB, FM, CW, ATV) and on 12-13.6 VDC. Your output won't drop when your motor's off!

A1015 — 6 Meter Amplifier

10W In - 150W Out @ 20-25 Amps

- Frequency Range ..... 50 to 52 MHz
- RF Power In..... 0.5 to 15 Watts
- Receive Preamp ..... 10 db Gain
  1.5 db Noise Figure
- Size ..... 12″×3″×5½″
- Weight ..... 5 lbs.

2 Meter Amplifiers — 144-148 MHz

B23A

2W In - 30W Out @ 5 Amps

- RF Power In..... 200 mw to 5 Watts
- Receive Preamp ..... 10 db Gain Min.
  -2.0 db±0.5 db Noise Figure
- Size ..... 3½″×2″×7″
- Weight ..... 1¼ lbs.

B215

2W In - 150W Out @ 5 Amps

- RF Power In..... 200 mw to 5 Watts
- Receive Preamp ..... 10 db Gain with
  -2.0 db±0.5 db Noise Figure
- Size ..... 12″×3″×5½″
- Weight ..... 5 lbs.

B108

10W In - 80W Out @ 10-12 Amps

- RF Power In..... 200 mw to 15 Watts
- Modes..... SSB, FM and CW
- Receive Preamp ..... 10 db Gain Min.
  -2.0±0.5 db Noise Figure
- Size ..... 8″×3″×5″
- Weight ..... 3 lbs.

B1016

10W In - 160W Out @ 20-25 Amps

- RF Power In..... 200 mw to 15 Watts
- Receive Preamp ..... 10 db Gain Min.
  -2.0 db±0.5 db Noise Figure
- Duty Cycle ..... Intermittent-Internal
  Overtemperature Protection
- Size ..... 12″×3″×5½″
- Weight ..... 5 lbs.

B3016

30W In - 160W Out @ 17-22 Amps

- RF Power In..... 200 mw to 45 Watts
- Receive Preamp ..... 10 db Gain Min.
  -2.0 db±0.5 db Noise Figure
- Duty Cycle ..... Intermittent-Internal
  Overtemperature Protection
- Size ..... 12″×3″×5½″
- Weight ..... 5 lbs.

1¼ Meter Amplifiers — 220-225 MHz

C22A

2W In - 20W Out @ 5 Amps

- RF Power In..... 200 mw to 5 Watts
- Receive Preamp ..... 10 db Gain
  -2.0 db±0.5 db Noise Figure
- Size ..... 3½″×2″×7″
- Weight ..... 1¼ lbs.

C211

2W In - 110W Out @ 18-20 Amps

- RF Power In..... 300 mw to 4 Watts
- Receive Preamp ..... 10 db Gain Min.
  -2.0 db±0.5 db Noise Figure
- Size ..... 12″×3″×5½″
- Weight ..... 5 lbs.

C106

10W In - 60W Out @ 10-12 Amps

- RF Power In..... 300 mw to 15 Watts
- Receive Preamp ..... 10 db Gain Min.
  -2.0 db±0.5 db Noise Figure
- Size ..... 12″×3″×5½″
- Weight ..... 3 lbs.

C1012

10W In - 120W Out @ 18-20 Amps

- RF Power In..... 300 mw to 15 Watts
- Receive Preamp ..... 10 db Gain
  -2 db±0.5 db Noise Figure
- Size ..... 12″×3″×5½″
- Weight ..... 5 lbs.

C3012

30W In - 120W Out @ 18-20 Amps

- RF Power In..... 5W to 45W (45W Max.)
- Receive Preamp ..... 10 db Gain
  -2 db±0.5 db Noise Figure
- Size ..... 12″×3″×5½″
- Weight ..... 5 lbs.

D24 — 430-450 MHz Amplifier

2W In - 40W Out @ 12 Amps

- Frequency Range ..... 430 to 450 MHz
- RF Power In..... Input 400mw to 4 Watts
  (4 Watts max.)
- Impedance ..... 50 Ohms Input and Output
- Duty Cycle ..... Intermittent-Internal
  Overtemperature Protection
- Size 7½″×2⅜″×7″ • Weight ..... 4 lbs.

— Specifications —

D1010 — 430-450 MHz Amplifier

10W In - 100W Out @ 20 Amps

- Frequency Range ..... 430 to 450 MHz
- RF Power In.....Input 300 mw to 15 Watts (15 Watts max.)
- Impedance ..... 50 Ohm Input and Output
- Duty Cycle ..... Intermittent-Internal Overtemperature Protection
- Size ..... 12″×3″×5½″
- Weight ..... 5 lbs.

D3010 — 430-450 MHz Amplifier

30W In - 100W Out @ 20 Amps

- Frequency Range ..... 430 to 450 MHz
- RF Power In..... 5W to 45W (45 Watts max.)
- Impedance ..... 50 Ohm Input and Output
- Duty Cycle ..... Intermittent-Internal Overtemperature Protection
- Size ..... 12″×3″×5½″
- Weight ..... 5 lbs.

RC1 — Amplifier Remote Control

FEATURES

- For Remote Control of all MIRAGE Amplifiers except B23A, C22A and D24.
- Small Size for Convenient Mounting
- Same Attractive Styling as all MIRAGE Products
- Allows for Trunk or Under Seat Mounting of Amplifiers

SPECIFICATIONS

- Functions ..... Duplicates All Switches on Amplifiers
- Size ..... 1¾″×3¾″×2½″
- Cable ..... 18', 6-Wire Cable Complete with Connectors

Noise Figure, Pre-Amplifiers, Dynamic Range, and All That Good Stuff!

Two of the least understood but most important parameters of any ham station are the noise figure and dynamic range of the receiver.

What is a good noise figure? Many times when hams get together in technical discussion, receiver noise figure is the all-important topic. The noise figure of a ham station receiver is a figure of merit. A numerical value that, in combination with many other variables, is a measure of the ability of the receive setup to extract weak signals from the other. What number is good? You may see ads that specify 0.5 dB noise figure. Does this mean that any number higher than this is useless? Well of course it doesn't. In fact, we should look to the first radio imports from Japan to give us our answer.

In most situations, the lower the noise figure the better the unit. On some bands and some receiving situations this is not true.

In Japan, where most transceivers are now designed, the density of population per square mile is so great that equipment is designed to be selective and immune to interference from adjacent channels. The design has to be a balance between the dynamic range and the noise figure.

In our abundant land areas we soon discovered that we could improve sensitivity of a transceiver by the addition of a low-noise pre-amplifier. In many circumstances a pre-amp will degrade the dynamic range. This is because strong local signals will produce intermodulation.

A pre-amplifier, in order to improve the absolute sensitivity of a receiver, must provide some gain combined with a minimal addition to system noise. The overall system noise figure is given by the following equation, where F1 is the pre-amplifier, F2, that of the second stage, or in this case that of the whole receiver, and G1, the pre-amplifier gain.

$$NF = F1 + (F2 - 1)/G1$$

From this it may be seen that the overall system noise figure depends not only upon the noise figure of the pre-amplifier, but also on its gain. However, as mentioned above, the receiver has a limited dynamic range. In other words, a maximum signal level that it can tolerate before crossmodulation occurs. Clearly, the addition of a pre-amplifier of, say, 20 dB gain will reduce this permissible signal level by 20 dB, while at the same time only extending the lower threshold of sensitivity by typically 17-18 dB. If there are no signals present that are of sufficient amplitude as to overload the receiver, then receive performance is improved. Otherwise the result of the additional gain may well degrade overall performance. The above is a simple explanation of the results to be expected when adding a pre-amplifier to a receiver.

Let us consider a typical 450 MHz station as might be used for terrestrial or space communications. For our example, the receiver has a noise figure of 2 dB, a common figure for modern Japanese UHF equipment. The antenna has 15 dBd gain and the feedline has a loss of -3 dB. Our optional pre-amplifier has a gain of 20 dB with a noise figure of 0.5 dB (probably the best unit that money can buy!).

With no pre-amplifier, our system noise figure is 5 dB. If we live in a quiet location that is one of low man-made or natural noise level, then the system noise will be the limiting factor in weak signal capability. We now have three choices:

1) Increase our antenna gain;
2) Insert our pre-amplifier at the receiver;
3) Insert our pre-amplifier at the antenna.

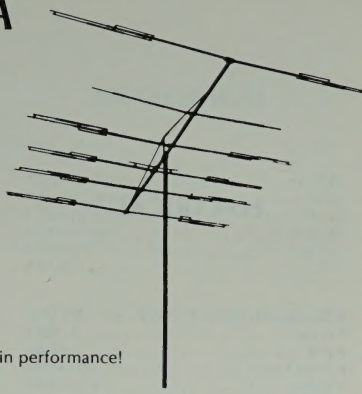
The first choice is a good one and gives the added advantage of increasing the ERP of the transmitter. Dynamic range is unaltered as although any unwanted signal is increased. So also is the wanted signal and by the same amount. At the same time the system noise figure remains the same.

Inserting our super low noise pre-amplifier at the receiver does two things. One, it reduces the receiver noise figure to just over 0.5 dB, a very good figure indeed, but as explained above, does degrade the receiver dynamic range by maybe 17 dB. The overall system noise figure is now down to a little over 2.5 dB, and some sensitivity improvement should be discernible.

Inserting our pre-amplifier at the antenna however will result in an overall system noise figure of only a little over 0.5 dB with no more dynamic range degradation than case #2. The all-important factor clearly is the feedline loss. The longer the feedline, the greater the loss and therefore the greater the system noise figure improvement to be had by placing the pre-amplifier at the antenna. In systems such as vehicle installations, feedline losses are usually low due to the use of very short lengths. However, in vehicle installations, it is usually external noise and not receiver noise performance that is a limiting factor. It should be remembered that even the most sophisticated ignition noise eliminator available will result in degradation of the received signal as it is impossible to eliminate noise pulses without also removing some of the wanted signal.

Degradation of receive system sensitivity due to feedline loss is a function of cable type and frequency. System performance regarding dynamic range and noise figure is a function of frequency and level of activity. At lower frequencies, *pre-amplifiers* are of little or no value due to the presence of high-level man-made and atmospheric noise. As system operating frequency increases, such noise levels decrease and receiver noise figure and feedline loss become limiting factors. Improvements obtained by using external pre-amplifiers range from little, when used after a long run of feedline, to dramatic, when correctly mounted at the antenna.

Best Amateur Tribanders Available — KT-34A/KT-34XA*



SPECIFICATIONS — KT-34XA

ELECTRICAL

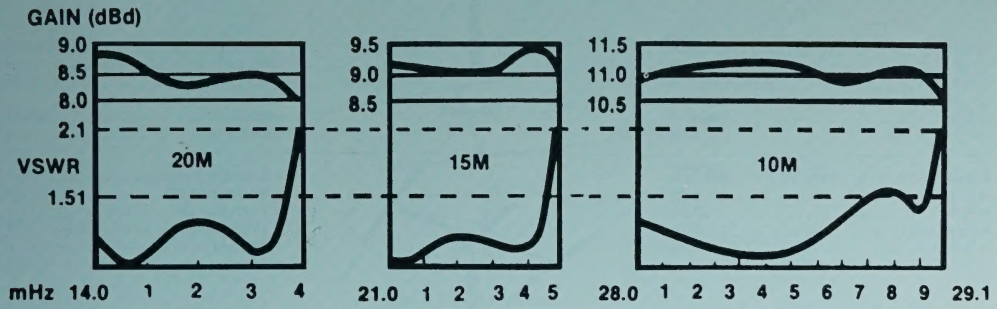
- Bandwidth ..... 14.0-14.350 MHz, 21.0-21.450 MHz, 28-29.7 MHz
- Gain ..... 8.5-9 dB, 9-9.5 dB, 11-11.3 dB
- VSWR 1.5:1
- F/B ..... 20 dB
- F/S ..... 40 dB
- Feed Imp ..... 50 Ohms with balun
- Balun ..... 4:1, 5 kW PEP

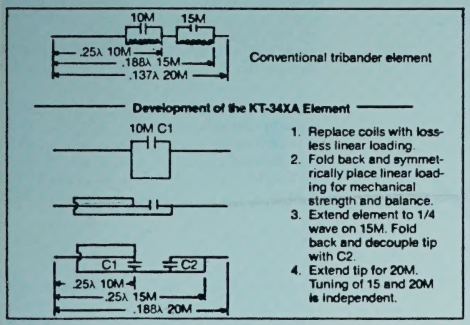
MECHANICAL

- Element Length ..... 24 ft.
- Boom Length ..... 32 ft.
- Turn Radius ..... 21.5 ft.
- Windload ..... 9 sq. ft.
- Weight ..... 68 lbs.
- Mast ..... 2 in. O.D.

*Lack of space or funds? How about a KT-34A? It's upgradable to a KT-34XA and similar in performance!

KT-34XA Gain vs. VSWR




10M
15M
.25λ 10M
.188λ 15M
.137λ 20M
Conventional tribander element
Development of the KT-34XA Element
10M C1
1. Replace coils with lossless linear loading.
2. Fold back and symmetrically place linear loading for mechanical strength and balance.
3. Extend element to 1/4 wave on 15M. Fold back and decouple tip with C2.
4. Extend tip for 20M. Tuning of 15 and 20M is independent.
C1
C2
.25λ 10M
.25λ 15M
.188λ 20M

The KT-34XA's design represents the first major advancement in tribander technology in over 20 years! The conventional traps, coils, and capacitors have been discarded in favor of integral linear loading and hi-Q air capacitors, all composed of aluminum tubing. These give the KT-34XA a conservative power handling capability of 5KW PEP and an unusually high level of operating efficiency. Linear loading also makes full ¼-wave elements possible on 10 and 15 meters, and brings 20 meters much closer to the desirable ¼-wave than any conventional tribander. The sketch above diagrams the profound differences between the KT-34XA and a typical tribander element and the electrical activity of its various sections. Note also the lower windloading profile!

21 Jan.-1988

Mr. W.M. Scott
Minage/K.L.M.
P. O. Box 1000
Morgan Hill, Ca. 95037

Hello Scotty

Just want you to know that once again your KT34XA is the king of the 10/15/20 meter bands!

In 1987, just closed, I worked 268 countries on 10/15/20 SSB with your KT34XA - and this was done in only 11 months - since I spent October in China at BY4RA and BY4AOM in Shanghai - away from my home qth.! -congratulations, Scotty, on providing the finest tri-bander available anywhere — . . . and you can quote me!

73/Ken Miller
KG3R/3

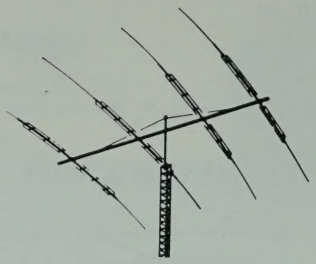
(See the Feb. issue of S.E.R.A. Repeater Journal's "Dream Farm" story — reprints available).

— 40 Meters —
7.0-7.3 MHz

ELECTRICAL

MECHANICAL
(Heavy Duty Booms Available)

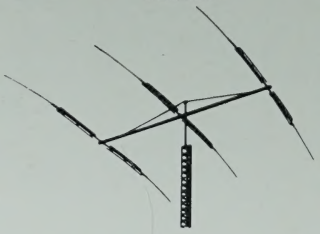
4 Element World Class



- Bandwidth @ 1.5:1 VSWR .... 260 kHz
- Gain 7.2dBd
- F/B ..... 20 db
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 KW

- Element Length ..... 46 ft.
- Boom Length ..... 42 ft.
- Turn Radius ..... 32 ft.
- Windload ..... 12 sq. ft.
- Weight ..... 85 lbs.
- Mast ..... 2 in.

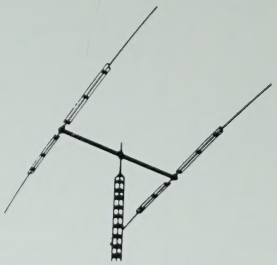
3 Element



- Bandwidth @ 1.5:1 VSWR .... 200 kHz
- Gain ..... 6.5 dBd
- F/B ..... 20 db
- Feed Imp ..... 50 Ohms
- Balun ..... 1:1, Coax

- Element Length ..... 46 ft.
- Boom Length ..... 32 ft.
- Turn Radius ..... 28 ft.
- Windload ..... 10 sq. ft.
- Weight ..... 70 lbs.
- Mast ..... 2 in.

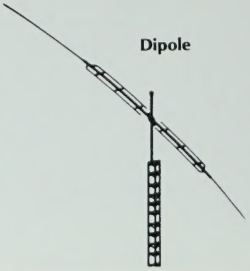
2 Element



- Bandwidth @ 1.5:1 VSWR .... 125 kHz
- Gain ..... 4.9 dBd
- F/B ..... 12 db
- Feed Imp ..... 50 Ohms
- Balun ..... 1:1, Coax

- Element Length ..... 46 ft.
- Boom Length ..... 16 ft.
- Turn Radius ..... 25 ft.
- Windload ..... 6 sq. ft.
- Weight ..... 45 lbs.
- Mast ..... 2 in.

Dipole



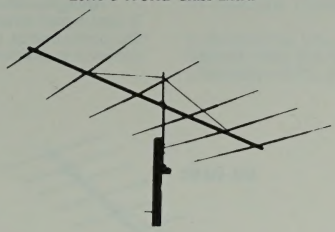
- Bandwidth @ 1.5:1 VSWR ..... 75 kHz
- Gain ..... 0 dBd
- Feed Imp ..... 50 Ohms
- Balun ..... 1:1, 5 kW

- Element Length ..... 46 ft., 6 in.
- Turn Radius ..... 23 ft.
- Windload ..... 2 sq. ft.
- Weight ..... 15 lbs.
- Mast ..... 2 in.

ELECTRICAL

MECHANICAL

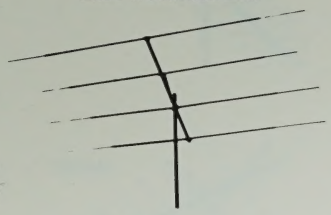
20M-6 World Class Extra



- Bandwidth ..... 13.9-14.4 MHz
- Gain ..... 11 dBd
- VSWR 1.5:1
- F/B ..... 30 db
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 kW

- Element Length ..... 37 ft.
- Boom Length ..... 57 ft.
- Turn Radius ..... 34 ft.
- Windload ..... 12.8 sq. ft.
- Weight ..... 95 lbs.
- Mast ..... 2 in.

15M-6 World Class Extra



- Bandwidth ..... 21.0-21.5 MHz
- Gain ..... 11.0 dBd
- VSWR 1.5:1
- F/B ..... 30 db
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 kW

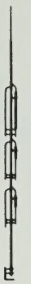
- Element Length ..... 25 ft.
- Boom Length ..... 36 ft.
- Turn Radius ..... 23 ft.
- Windload ..... 8.5 sq. ft.
- Weight ..... 60 lbs.
- Mast ..... 2 in.

10M-6 World Class Extra

- Bandwidth ..... 28-30 MHz × 1 MHz
- Gain ..... 11 dBb
- VSWR 1.5:1
- F/B ..... 30 db
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 kW

- Element Length ..... 18 ft.
- Boom Length ..... 27.5 ft.
- Turn Radius ..... 16.5 ft., 8 in.
- Windload ..... 4 sq. ft.
- Weight ..... 29 lbs.
- Mast ..... 2 in.

10M-4



- Bandwidth ..... 28-30 MHz × 1 MHz
- Gain ..... 7.7 dBd
- VSWR 1.5:1
- F/B ..... 25 db
- Feed Imp ..... 50 Ohms
- Balun ..... 4:1, 5 kW

- Element Length ..... 18 ft.
- Boom Length ..... 10 ft.
- Turn Radius ..... 10.5 ft.
- Windload ..... 2.25 sq. ft.
- Weight ..... 12 lbs.
- Mast ..... 2 in.

— Moonbouncers —

Mirage/KLM is fueling the **Moonbounce** and Oscar 10 revolution with antenna equipment that delivers truly Out-of-This-World performance.

For the **Moonbouncer**, our new 2M-16LBX is designed to be the highest gain 2-meter antenna available on the market today by more than a full db, making the 2M-16LBX an outstanding performer as a single antenna or in **Moonbounce** (EME) arrays.

The new 432-30LBX follows the same pattern as the 2M-16LBX, and soon will become the industry's standard of comparison.

Featuring straightforward construction, and an innovative tapered boom and greatly reduces windload and adds strength and durability. Virtually unbreakable, insulated, 3/16" rod parasitic elements are anchored through the boom to ensure years of trouble-free performance.

For the satellite enthusiasts, the 2M-22C high gain, 2-meter, circular polarized antenna features the same rugged construction and total flexibility as our very popular 2M-14C with a 2 db increase in gain.

Four or more 2M-22Cs make an excellent array for **Moonbounce** (EME) by eliminating Faraday fading.

Fiberglass/aluminum stacking frames are available as well as 2- and 4-port power dividers and phasing harnesses to optimize the performance of these type arrays. Our new elevation drive system is available with MTI*.

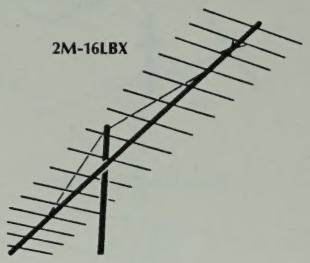
2M-16LBX - Specifications

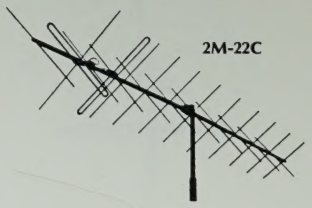
ELECTRICAL

- Bandwidth ..... Spec. 144-146
  Usuable 143-148
- Gain 144-14.5
  145-14.5 — 146-14.4 — 147-14.3 — 148-13.2
- VSWR 1.2:1
- Beamwidth ..... E = 26°, H = 29°
- Feed Imp ..... 50 Ohms, unbal.
- Balun ..... 4:1, 2 kW Coax

MECHANICAL

- Element Length ..... 45⁄8 in. max.
- Boom Length .. 28 ft. (4.1 wavelengths)
- Turn Radius ..... 15 ft., 5 in.
- Windload ..... 2.44 sq. ft.
- Weight ..... 10 lbs.
- Mast ..... 21⁄8 in. max.





2M-22C - Specifications

- Bandwidth ..... 144-148 MHz
- Gain ..... 13 dBdC
- Beamwidth ..... 34°
- Feed Imp ..... 50 Ohms unbal.
- Balun ..... (2) 4:1 coax
- Boom Length .... 19 ft., 1 in. (tapered)
- VSWR 1.5:1
- Windload ..... 1.85 sq. ft.
- Ellipticity ..... 3 dB max.
- Circularity Switcher .... CS-3 included
- Weight ..... 11 lbs.

435-40CX - Specifications

ELECTRICAL

- Bandwidth ..... Spec. 420-440 MHz
  Usable 410-450 MHz
- Gain ..... 15.2 dBdC at 436 MHz
- VSWR 1.5:1
- Beamwidth ..... 25°
- Feed Imp ..... 50 Ohms unbal.
- Balun ..... 4:1, coax 1 kW*
- Mount ..... Center

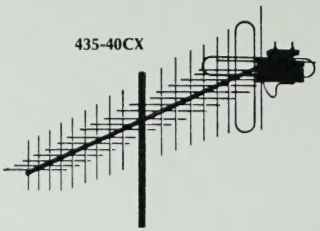
*250W max. when using CS-2 Switcher. (Supplied)

MECHANICAL

- Element Length ..... 13.625 in. max.
- Boom Length ..... 175.5 in.
- Turn Radius ..... 105 in.
- Windload ..... 1.16 sq. ft.
- Weight ..... 10 lbs.
- Mast ..... 1½" max.
- Polarity ..... Circular R.H. and L.H.
  Switchable using CS-2

432-30LBX - Specifications

- Bandwidth ..... 430-440 MHz
- Gain ..... 17.3 dBd
- Beamwidth ..... 20°
- Feed Imp ..... 50 Ohms unbal.
- Balun ..... Included
- Boom Length ..... 21 ft., 9 in.
- F/B ..... 20 dB
- F/S ..... 35 dB
- VSWR 1.5:1
- Windload ..... 1.43 sq. ft. (typical)
- Turning Radius ..... 12 ft., 5 in.
- Weight ..... 9 lbs.



*Mirage Tracking Interface

The Mirage Tracking Interface system includes a complete hardware and software package for real-time tracking of man-made earth satellites, the Moon, and the Sun, referenced to your QTH. The MTI and your IBM compatible can display a high-resolution world map, and up to 16 satellite tracks updated as often as once per second! Satellite coverage circles are shown, and satellites usable between two specified locations are automatically determined. Elevation, azimuth, and doppler shift corrections are displayed for any selected satellite and observer. The heavy-duty rotor will give your antennas instant access to what is displayed on the screen.

ALL THIS AND ASTRONOMY TOO?

Radio astronomy amateurs will love the MTI too. It locates the sun, moon, planets, and selected stars at the push of a button. Perfect for EME work.

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